

# SAGEM TURBO PLUG



## User Guide

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July 2005 Issue

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## Warning



Warning icon, used in this guide.



Information icon, used in this guide

# Foreword

## **Thank you for your trust!**

The SAGEM TURBO PLUG adapters are compatible with the HomePlug standard and will let you create or extend a home network easily and inexpensively. The IT procedures, such as data transfers, access to a common printer within the private network or access to the Internet, are handled via your home's electrical installation. A SAGEM TURBO PLUG adapter transforms each power outlet in your home into a network access point. This gives you total freedom, from cellar to attic, with everything done via the power outlet.

## **Information on this documentation**

This guide will unveil all the secrets of your SAGEM TURBO PLUG adapter. Among other things, it will describe for you how to enable your adapter. Also, in the chapter entitled "Everything you need to know about the domestic network", you will find typical SAGEM TURBO PLUG adapter applications, and general comments on network design.

In order to provide you with a user-friendly adapter, we have implemented stringent quality controls in the production chain to ensure the reliability of our products.

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## **1. Introduction**

In this section, we will give you an overview of the new PLT technology and will introduce you to the SAGEM TURBO PLUG adapter.

### **1.1 What does "Power Line" stand for?**

In addition to the wired and wireless network technologies (LAN and Wireless LAN) that are already familiar in the domestic networks domain, you now have another "Power Line" technology. "Power Line" technology consists in setting up a domestic network via your home's electrical installation.

#### **Transmission costs and quality**

"Power Line" technology represents an economical and practical networking method. There is no longer a need to run numerous additional cables, and each power outlet serves as a point of access to the domestic network.

For "Power Line" technology, the electrical cables receive additional frequency modulations. The methods applied here are known and proven in data transmission and have been used for many years in other sectors. Today, PLT can be used to set up links to the Internet or to local area networks (in your home or at the office). Depending on the loss factor, distances up to 200 meters can be covered.

With a data rate of up to 85 Mbit/s and symmetrical upload and download capabilities, the "Power Line" technology is outstripping the conventional Ethernet networking solutions for domestic networks. Depending on the quality of the cables, bandwidths of 35 Mbit/s can be achieved in practice, which is perfectly adequate for extending the DSL connection into all the rooms of your home.

#### **Data Confidentiality**

For security reasons, software-activated 56-bit encryption is recommended because it guarantees data transfers in total safety within the network.

### 1.2 What can the SAGEM TURBO PLUG adapters do for you?

The SAGEM TURBO PLUG adapters will let you create or extend a domestic network easily and inexpensively. The IT operations, such as data interchanges, access to a common printer within the private network or access to the Internet, are handled via your home's electrical installation. An adapter can be used to convert each of your home's power outlets into a network access point. This gives you total freedom, from cellar to attic, with everything done via the power outlet.

The advantages provided by networking various computers within your home or office are obvious:

- ◆ Shared use of a single Internet access (for example, Internet access by DSL),
- ◆ Shared use of a single printer (connected to a computer),
- ◆ Shared access to data backed up centrally,
- ◆ Connection of a games console,
- ◆ Networked multi-player games.



*You will find typical applications illustrating various networks, and general comments in the section entitled "Everything you need to know about the domestic network".*



### 1.3 Pack contents

Before you start to install your SAGEM TURBO PLUG adapter, check that all the component parts of the product are included in the package:

- 2 x SAGEM TURBO PLUG adapters,
- 2 x RJ45/RJ45 Ethernet leads,
- CD with drivers, on-line documentation and SAGEM F@st™ PLUG software.
- 1 Quick Installation Guide, paper version.



**2 x SAGEM TURBO PLUG (1)**



**2 x RJ45/RJ45 Ethernet lead (2)**



**CD-ROM (3)**



**Quick Installation Guide (4)**



## 2. Pre-requisites - Description - Installation

In this section, we will show you how to install your SAGEM TURBO PLUG adapters.

### 2.1 Requisite system configuration of the SAGEM TURBO PLUG

To be able to use your SAGEM TURBO PLUG, your PC must meet the following conditions:

- ♦ **Operating systems:** Windows<sup>®</sup> 98SE, Windows<sup>®</sup> Me, Windows<sup>®</sup> 2000 or Windows<sup>®</sup> XP,
- ♦ **Ethernet connection.**



Your computer, or at least the device to which the SAGEM TURBO PLUG will be connected, must have an Ethernet interface, that is, a network card.

2.2 Connection and display elements of the SAGEM TURBO PLUG

The SAGEM TURBO PLUG adapter is provided with two LEDs and an Ethernet connection.



Marking	Meaning
POWER	Comes on steady when the SAGEM TURBO PLUG is powered up.
SYNC	Comes on steady when a dialog with established with another SAGEM TURBO PLUG in the network.

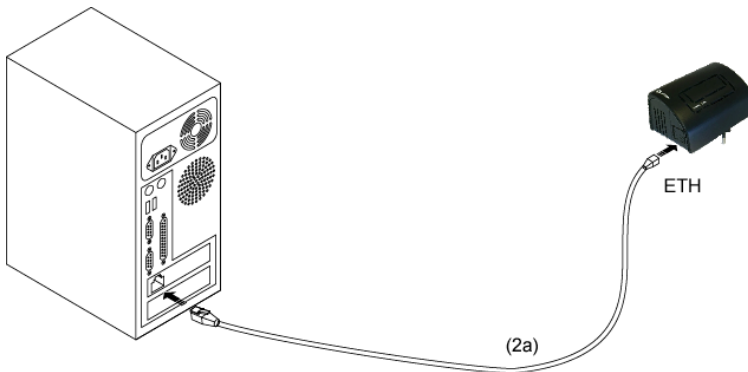
**Ethernet connection:** for linking the SAGEM TURBO PLUG adapter to a computer or to another device via the straight-pinned Ethernet cord supplied in the packaging.

### 2.3 Installing the SAGEM TURBO PLUG adapter

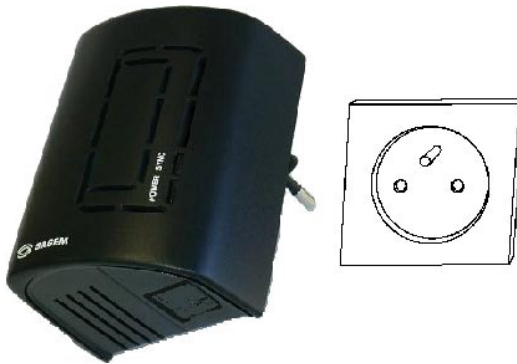


*Before connecting the SAGEM TURBO PLUG adapter, make a note of its password (Security ID) and keep it to hand for network configuration purposes. The password (Security ID) can be found on the rear panel of the adapter.*

- ① Connect one of the R45 type terminations of the Ethernet cord (2a) (supplied in the packaging) to your computer's Ethernet port.
- ② Connect the other R45 type termination to the ETH socket on the SAGEM TURBO PLUG adapter.



- ③ Plug the SAGEM TURBO PLUG adapter via its mains plug into a wall socket power outlet.



*Commissioning the SAGEM TURBO PLUG requires no driver*



### 3. SAGEM F@st PLUG Software

When the connections have been made, your computer can dialog with your SAGEM TURBO PLUG.

However, installation of this utility is recommended because it can be used to supervise all the "Power Line" adapters that you have installed.

#### 3.1 Installing the software and the USB drivers



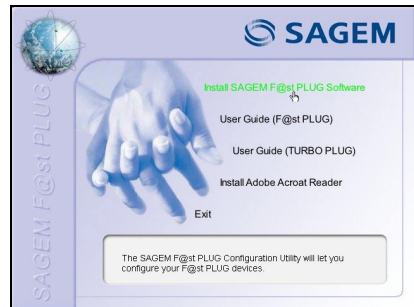
The installation procedure described below was performed in **Windows® XP**.

Installation in other Windows® operating systems (98, ME and 2000) may differ slightly.

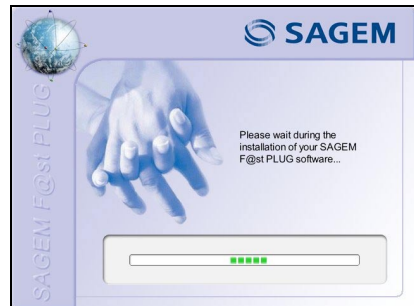


In Windows® 98, it is necessary to restart your computer at the end of the installation.

- ① Insert the installation CD-ROM in your computer's appropriate drive ; the opposite screen appears.
  - Select **Install logiciel SAGEM F@st PLUG Software**.



- ②
  - The opposite screen appears and prompts you to wait.



③ The opposite screen appears.

- Plug your Power Line cables of your adapter (ETH or USB) as shown sub-section 2.3.
- Click the  button to follow installation.



④ The opposite screen appears.

Software Installation is finished and your adapter le logiciel SAGEM F@st PLUG is successfully installed.

- Click the  button to shut the installation wizard.

At the end of the installation, the next icon is created in the desktop.





## 3.2 Description of the SAGEM F@st PLUG software

SAGEM F@st™ PLUG is a utility that lets you:

- view the list of the "Power Line" adapters connected locally to your computer and all the remotely connected adapters,
- configure the privacy of your network,
- obtain information on the system and a network quality diagnostic report.

### 3.2.1 Information

"SAGEM F@st PLUG" displays information on all the "Power Line" devices on your network such as the MAC addresses or the connection data rate.



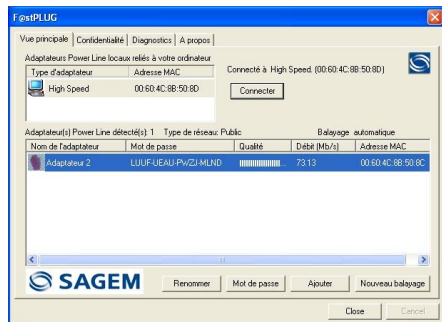
*The MAC (Media Access Control) address is a serial number that is unique in the world. It is programmed into the hardware once and for all and cannot be changed. The adapter's MAC address is shown on the rear panel of the device.*

### 3.2.2 "Main" tab

The **Main** view essentially lists all the "Power Line" adapters connected to your computer either locally or remotely via the electric power system.

- Click the icon created on the desktop to run the SAGEM F@st™ PLUG program.

The screen opposite appears with the **Main** tab selected.



The "**Local Power Line adapters connected to your computer**" field gives the list of "Power Line" adapters connected directly to your computer's Ethernet port. If there are several adapters, select the one you want to use and click the **"Connect"** button. The adapter to which the PC is connected appears above this button.

**Note:** The program periodically scans the network to find other adapters connected remotely via the electric power system.

The field at the bottom lists all the "Power Line" adapters found on the computer network. The line above this field gives the number of adapters found and the type of network (public or private).

For each remote adapter, the following information is displayed in the field:

Field	Meaning
<b>Adapter name</b>	Automatically assigns a name to each adapter. You can change the name either by overwriting it or by clicking the <b>"Rename"</b> button.
<b>MAC address</b>	Displays the MAC address of each adapter.
<b>Password</b>	Displays the password or security ID of each adapter. This field is not completed automatically. If you want to remotely manage each adapter on the network, you must enter the password specific to each adapter by clicking the <b>"Password"</b> button.

To enter an adapter's password, recover the "Security ID" located to the rear panel of the adapter then click the **"Password"** button.

The dialog box opposite appears; in the appropriate field, enter the password that appears on the label affixed to the adapter and then click **OK** to confirm the entry.

A confirmation box appears if the password is correct and the adapter has been detected.



**"Add" button**

The **"Add"** button lets you add to your network an adapter that does not appear in the list in the Main View; this applies for example to adapters that belong to another computer network. To do this, click the **"Add"** button:

The dialog box opposite appears.

- In the appropriate field, enter the name you want to give to the adapter.
- In the appropriate field, enter the password that appears on the label affixed to the adapter.
- Then click **OK** to confirm the entry.



*Caution, all the adapters you want to add to your network must be physically connected.*

**"Scan" button**

Click the **"Scan"** button to run an immediate search for the "Power Line" adapters that are on the network.

### 3.2.3 "Privacy" tab

"SAGEM F@st PLUG" helps you to set up a network using the "Power Line" technology with data encryption. With it you can add the required adapters to your network. You can configure all the "Power Line" adapters on the network centrally, that is from a single workstation. For encryption, you need the adapters' security IDs. You must also configure a network password in order to protect your network. Below is a description of how to configure the network.



*Be sure to have close to hand the adapter passwords (security ID) you have noted down. The configuration assistant needs them to configure the network. The password (security ID) appears on the rear panel of each adapter.*



*The "Power Line" adapter directly connected to your computer is automatically detected and configured.*

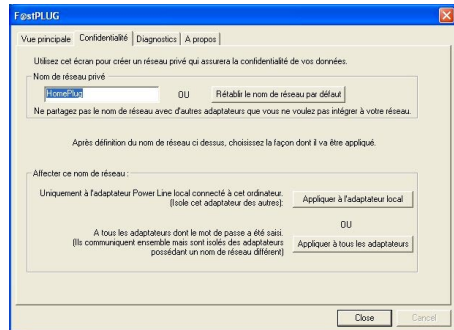
The **Privacy** tab lets you:

- manage your local network and ensure the privacy of the data you send.
- configure the network name used to encrypt the data sent over your local area network.

#### Notes:

- 1) Adapters supplied in packs of two have a network name preconfigured at the factory, so you do not need to change it.
- 2) Adapters supplied in packs of one have a universal, public network name (HomePlug). It is therefore advisable to change it to protect your network and protect you from any hacking. Nevertheless, you can use your adapters without protection; this is the default operating mode.
- 3) You must assign the same network password to all the adapters belonging to the same network.

- Select the **Privacy** tab: the dialog box opposite appears.



#### "Private network name" area

- In the appropriate field, enter the name you want to give to your private network.

You can also reinstate the "HomePlug" public network name by clicking the **"Use Default (Public network)"** button.

#### "Place on this network" field

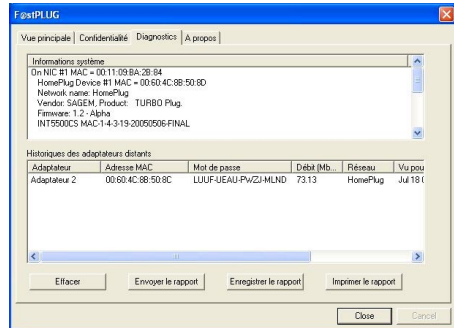
The **"Set Local Device Only"** button lets you change the network name of the local adapter only. After changing the local adapter's network name only, all the adapters listed in the Main view can no longer communicate with the local computer because they now belong to another computer network.

The **"Set All Devices"** button lets you change the network name of all the adapters that appear in the Main view with their password (security ID).

### 3.2.4 "Diagnostics" tab

The **Diagnostics** tab shows you the system information and a history of all the devices detected.

- Select the **Diagnostics** tab; the dialog box opposite appears.



The **"System information"** field displays the technical information concerning your PC and its connections to the "Power Line" networks. It includes the following data:

- MAC addresses of all the network ports on your PC,
- User name of the "Power Line" adapters connected to these ports and their MAC addresses,
- Name of the network to which the "Power Line" adapter belongs,
- Name of the supplier and reference number of the adapter,
- Firmware reference of the "Power Line" adapter,
- Software and hardware information of your PC,
- User name,
- Identification of the DLL and SAGEM F@st PLUG library.

The **Remote device histories** field contains a history of all the remote "Power Line" adapters detected at least once by your PC.

The active adapters appear with a bit rate indication. The adapters that belong to other networks or that are no longer detected appear with a "?" in the "**Rate (Mbps)**" column. The information available in this area is as follows:

- the adapter's user name,
- the adapter's MAC address,
- the adapter's password,
- the current bit rate,
- the network name,
- date and time the adapter was last seen,
- the manufacturer's name.

This data can be saved ("**Save report**" button) in a file for emailing ("**Email report**" button) or printing ("**Print report**" button) for technical support purposes.

The adapters that are no longer on the network can be removed from the list by clicking the "**Delete**" button.



*The network configuration can be altered or updated at any time. For this, repeat the configuration procedure described above.*





### 4. Everything you need to know about the domestic network

This section contains important and useful information concerning networks, from the configuration of your computers to general tips, through typical applications.

#### 4.1 Computer configuration

Now that you have finished connecting and installing your SAGEM TURBO PLUG adapter, we would like to use this section to show you how to correctly configure your computers or check that the parameter settings are correct.



For applications without DHCP server, do not apply the procedure described in this section, but refer directly to the appropriate sections, 4.2.1 and 4.2.3.



The configuration procedure described was performed in **Windows<sup>®</sup> XP**. The configuration procedure in other Windows<sup>®</sup> operating systems (98, ME and 2000) may present slight differences.



In Windows<sup>®</sup> XP, the Start menu can be configured differently. You will find full information in the Windows<sup>®</sup> XP documentation.

#### If you use a router to access the Internet

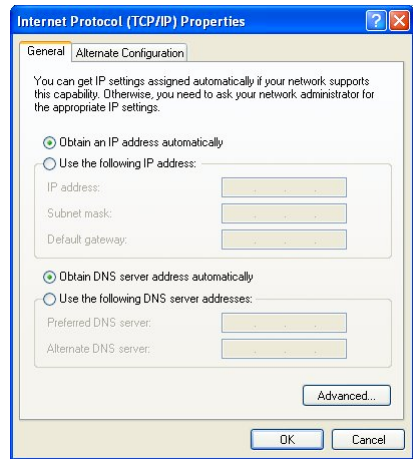
You must:

- Configure your computer as a DHCP client (1),
- Prevent your computer from setting up a connection to the Internet itself, but allow only the router to set one up (2).

- ①
  - Select **Start / Control Panel / Connections**,
  - Click the right mouse button on the appropriate LAN connection and select **Properties**.
  - In the "Components checked are used by this connection" field, select **"Internet Protocol (TCP/IP)"**
  - Click the **Properties** button.

The screen opposite appears.

- Select the **"Obtain an IP address automatically"** option.
- Click the **OK** button to exit from the dialog box



If the "Internet protocol (TCP/IP)" component does not appear in the "Components checked are used by this connection" field, install this protocol as follows:

- Click the **Install** button, select **Protocol** then click the **Add** button.
- A dialog box appears, select Microsoft in the "Manufacturers" field then **Internet Protocol (TCP/IP)** in the "Network protocol:" field.
- Click **OK** to confirm.

- ②
- Select **Start / Control Panel / Internet Options**,
- A screen appears. Select the **"Connections"** tab
- Check the **"Never dial a connection"** box.
- Click the **OK** button to exit from the dialog box.



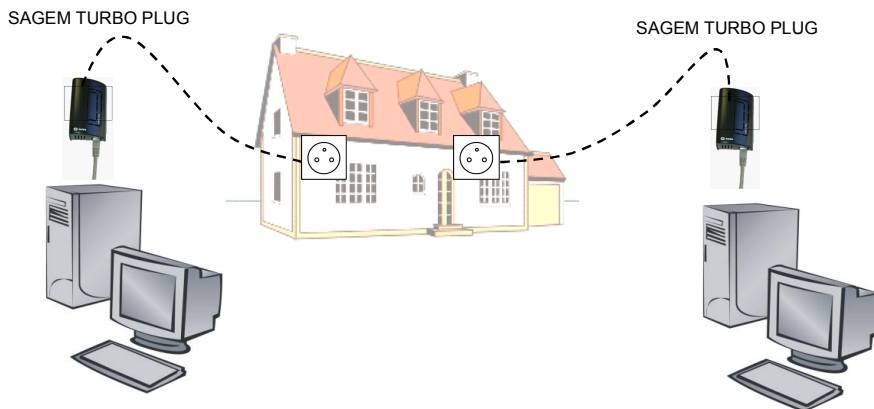
*Some applications, such as electronic mail clients, may need this information. In this case, it may be necessary to configure the "Connect using" parameter by activating 'LAN'.*

## **4.2 Examples and applications**

In this section, we will be describing the various possible applications.

### **4.2.1 File sharing solution between a number of workstations - Option 1**

Networking a number of workstations (two or more)

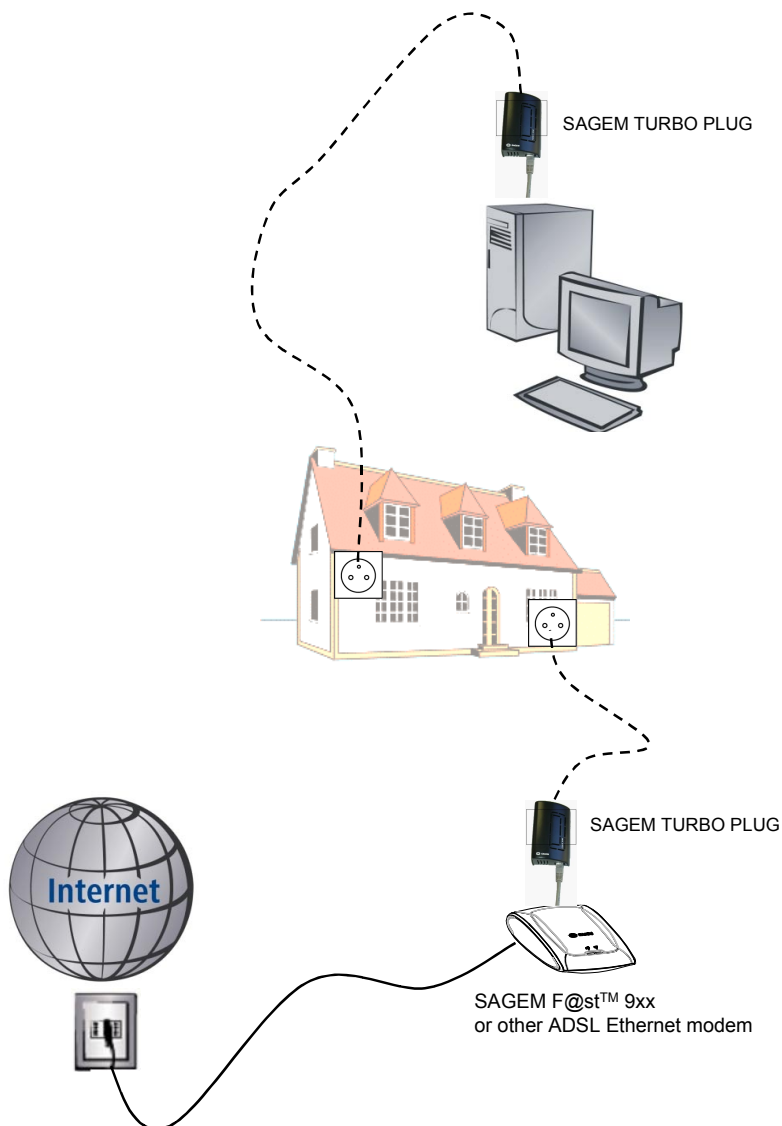


In this case, the IP addresses must be configured manually on each networked station. We would advise you to use the following IP addresses: "192.168.0.1", "192.168.0.2", etc., respectively on stations No.1, No.2, etc. (using the mask "255.255. 255.0"). Each station must be configured with a unique IP address.

You will find full information on how to configure IP addresses in the Windows<sup>®</sup> documentation.

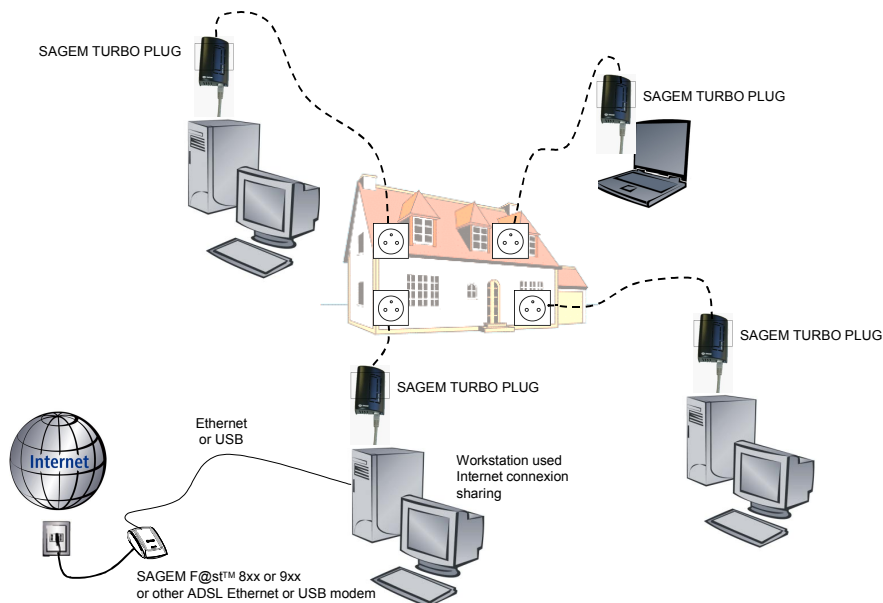
#### **4.2.2 Internet access by ADSL solution for individual workstation - Option 2**

Workstation with Internet access via an ADSL modem



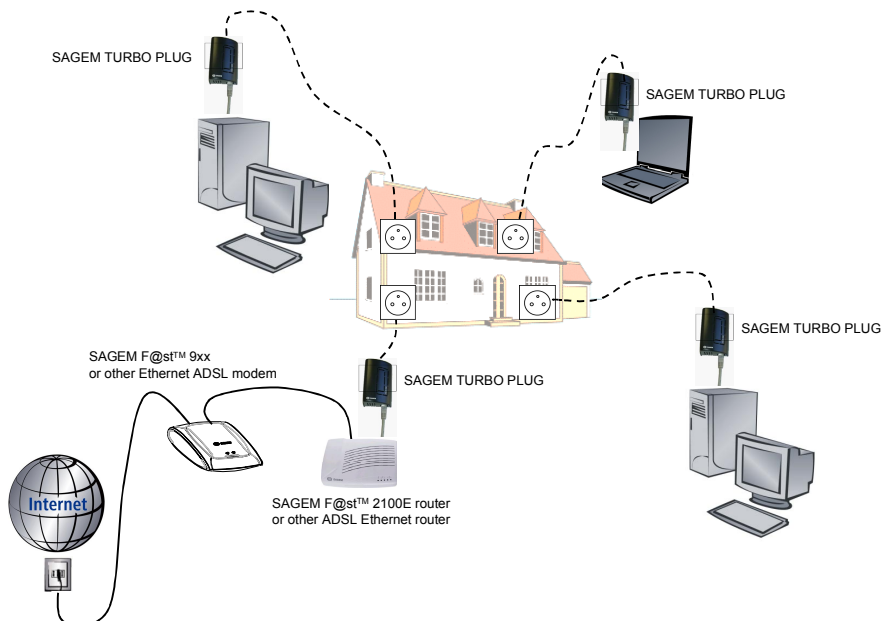
### 4.2.3 Internet access by ADSL solution with shared Internet connection - Option 3

Use of one of the workstations for sharing Internet connection (functionality available in Windows<sup>®</sup>).



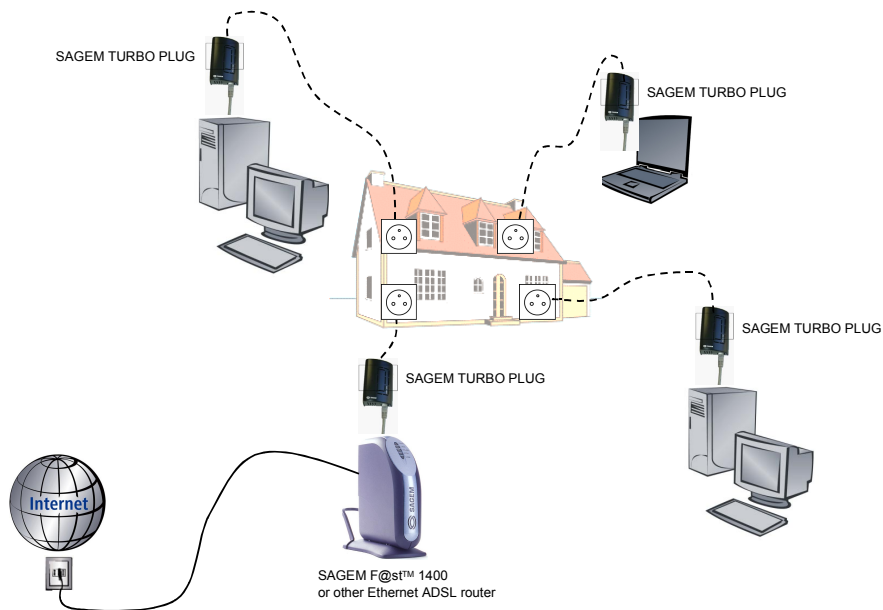
#### **4.2.4 Domestic networking - Option 4**

Networking of a number of workstations with Internet access via a LAN router and an ADSL modem



### 4.2.5 Domestic networking - Option 5

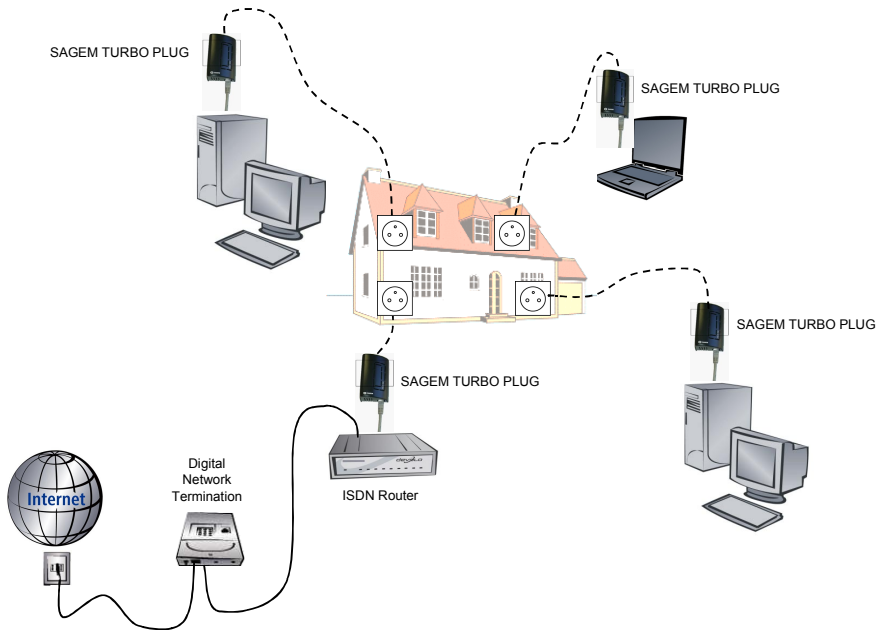
Networking a number of workstations with Internet access via an ADSL modem router





### **4.2.6 Domestic networking - Option 6**

Networking a number of workstations with Internet access via an ISDN router



### 4.3 Important information

#### Extent of the network

In theory, you can connect up to 253 adapters in one home but in practice it is advisable not to connect more than ten devices simultaneously.

#### Compatibility

The SAGEM TURBO PLUG adapters are compatible with all other **SAGEM** LAN products, with all devices compliant with the IEEE 802.3 standard and with other HomePlug devices.

#### Security within the network

In most cases, the electricity meter already serves as a physical barrier, which means that only the devices linked to one and the same electricity meter can be part of the same network.

#### Important notes concerning passwords

By applying a number of important rules on the use of passwords, you will considerably increase security.

- ♦ Keep the password as secret as possible.
  - Never make a note of a password. Favorite, but totally inadequate places are, for example: notepads, wallets and text files on the computer. Never reveal a password unless absolutely necessary.
- ♦ Choose a random password.
  - Use a random sequence of letters and digits. Passwords from everyday language cannot be considered safe.
- ♦ Change your password regularly, and absolutely without fail immediately you think it may have become known to other people.
  - You should modify your passwords as often as possible. This considerably increases security.
  - When there is the slightest suspicion of a possible leak, you must change the password.



*For security reasons, we would, however, advise you to use the internal encryption of the SAGEM TURBO PLUG adapters, set up using the "SAGEM F@ST PLUG Configuration Utility" software. These also refer to the preceding section.*

## 5. Appendix

### 5.1 Technical specifications of the SAGEM TURBO PLUG

The table below lists the product's main technical details.

	SAGEM TURBO PLUG
Standards	Ethernet IEEE 802.3 specification Compatibility with the HomePlug standard
Protocols	CSMA/CA
Modulation	OFDM - 84 Carrier
Range	Up to 200 m
Security	56 bits DES
Transmission speed	85 Mbit/s
Transmission procedure	Asynchronous/CA
LEDs	1x2 status POWER and SYNC
Electrical network connection	Euro mains plug
Computer interface	RJ45
Consumption	3 VA max
Power supply	100-230V AC power supply unit incorporated via power outlet
Temperature	Storage: -25°C - +70°C Operation: 0°C - +40°C
Ambient conditions	0 to +40°C, 10 to 90% relative humidity (non-condensing)
System requirements	PC with Ethernet interface Windows <sup>®</sup> 98 SE, Windows <sup>®</sup> Me, Windows <sup>®</sup> 2000, Windows <sup>®</sup> XP.
Dimensions and appearance	92 mm x 60 mm x 85 mm (height x width x depth) plastic casing

## **5.2 Safety warnings on the SAGEM TURBO PLUG**

### **5.2.1 Safety levels**

The SAGEM TURBO PLUG product conforms to EN 60950, December 2001 edition.  
The safety levels in the sense of this standard are as follows:

<b>Connector</b>	<b>Function</b>	<b>Safety level</b>
<b>Mains plug</b>	Primary power supply access	HPV <sup>1</sup>
<b>ETH</b>	Ethernet interface port	SELV <sup>2</sup>

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<sup>1</sup> **Hazardous Primary Voltage** circuit

<sup>2</sup> **Safety Extra Low Voltage** circuit

### 5.2.2 Safety instructions

- Before installing and using the SAGEM TURBO PLUG, you must read all the related instructions.
- Upkeep and maintenance should be performed exclusively by a qualified technician.  
Never open the casing when live. This will expose you to hazardous voltages and other high risks.  
**Note:** The non-compliance with this clause immediately invalidates the warranty.
- The SAGEM TURBO PLUG is designed for connection to a TT or TN system power supply network.
- The SAGEM TURBO PLUG is not designed for connection to an electrical installation with IT system (power supply with independent neutral).
- The protection against short circuits and leaks between phase, neutral and earth must be provided by the building's electrical installation. The power supply circuit for this equipment should be provided with 16 A overcurrent protection and a differential protection.
- The SAGEM TURBO PLUG must be installed and used inside a building.
- The ambient temperature must not exceed 40°C.
- The SAGEM TURBO PLUG must not be exposed to strong sunlight or to a strong heat source.
- The SAGEM TURBO PLUG must not be placed in an environment subject to significant steam condensation.
- The SAGEM TURBO PLUG must not be exposed to splashed water.
- Never use liquid or aerosol cleaning agents.
- You must immediately remove the unit from the wall socket and then notify the After Sales Service in the following cases:
  - when the interconnecting cables are damaged,
  - if a liquid has penetrated into the casing,
  - if the unit has been in contact with water or rain,
  - when the SAGEM TURBO PLUG fails to operate normally although all the instructions have been followed,
  - if you observe a significant change in performance.

#### Warning

In a residential environment, this device can cause radiofrequency interference. In this case, the user is requested to take the appropriate measures.

### 5.3 Directive 2002/96/CE (EEEW)

#### ENVIRONMENT

Preservation of the environment as part of a sustainable development logic is an essential concern of **Sagem Communication**. **Sagem Communication**'s aim is to operate systems safeguarding the environment and consequently it has decided to integrate environmental performance considerations in the life cycle of its products, from manufacturing to commissioning, use and disposal.

#### PACKAGING



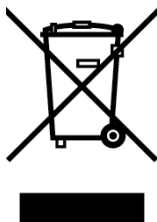
The presence of the logo (green dot) means that a contribution is paid to an approved national organization to improve packaging recovery and recycling infrastructures.

To facilitate recycling, please respect the sorting rules set up locally for this kind of waste.

#### BATTERIES

If your product contains batteries, they must be disposed of at appropriate collection points.

#### The PRODUCT



The crossed-out waste bin marked on the product means that the product belongs to the family of electrical and electronic equipment.

In this respect, the European regulations require you to dispose of it selectively:

- At sales points on purchasing similar equipment.
- At the collection points made available to you locally (drop-off center, selective collection, etc.).

In this way you can participate in the re-use and upgrading of Electrical and Electronic Equipment Waste, which can have an effect on the environment and health.





Siège social : 27, rue Leblanc - 75512 PARIS CEDEX 15 - FRANCE  
Tél. : +33 1 40 70 63 63 - Fax : +33 1 40 70 66 40  
<http://www.sagem.com>

Société Anonyme au capital de 300 272 000 € - 480 108 158 RCS Paris